```
ochober 30
  6 5(F) = 85(F-30) + 85(F+30)
                                                                                                                                                                                                10 xc(1) = 50 cos (21150 t) + 10 cos (21160 t) + 10 cos (21140 t)
              R(I) = ?
P = ? = 10W
                                                                                                                                                                                                   = 50 cos (211 150 t) + 20 cos (211 150 t) cos (211 10 t)
                F-1 [S(F)] = 16 cos (2 1307) = 16 cos (60 pt)
                                                                                                                                                                                                       X=(A) = A=(1+=Mn(+))-cos(211fc+)
    7. HI(f) = 1 = e-10 t u(t)
                                                                                                                                                                                                    = 50 cos (21150t) [1 + 20 cos (2110t)]
           H_{2}(f) = \underbrace{\begin{array}{c} 10 + j 2 \pi f \\ E - 12^{20 \pi f} \end{array}}_{10 + j 2 \pi f} = e^{-j 2^{20 \pi f}} \frac{1}{10 + j}
= e^{-10(t - 10)} u(t - 10)
                                                                                                                                                                                                       a = \frac{20}{50} P_{car} = \frac{50^2}{2} \frac{2500}{3} = 1250 \text{ W}
                                                                                            10 + 12 m f
                                                                                                                                                                                                      P = \frac{10^2}{10^2} + \frac{10^2}{100} = 100
18. h(t) = cos (40 Tt) u(t)
                                                                                                                                                                                                  Narrow Band -> Wideband Modulation.
               (00 |h(t) | dt = (00 | (40 Tt) | dt = 00
-00 | Not BIRO Stable
                                                                                                                                                                                                                                                                      FC1 Freq

Fal Pear freq

D. Leviation
                                                                                                                                                                                                  m(t)
                                                                                                                                                                                                                          Narrowband
                                                                                                                                                                                                                                                                                                                 1km ....
9 x(1) = Ac 1 wot
                                                                                                                                                                                                                          Frequency
                                                                                                                                                                                                                                                                                                              Frequency
                                                                                                                                                                                                                          Modulator
                                                                                                                                                                                                                                                                                                              multiplier
                = Acos (wot) + Aisin (wot)
       î(t] = Asin (wet) - Aj cos (wet) = -Aj (cos (wet) * j sin (wet))
= -jAej wet
                                                                                                                                                                                                                    wideband frea Modulator
                                                                                                                                                                                                       for mfor prompt
                                                                                                                                                                                                             ... £ 4.2 × 11 £ 4.2 ...
      4(1)
                                                                                                                                                                                                                                   e (t)
                                                                                                                                                                                                                                                        Bandpass
                                                                                                                                                                                                                                                                                                          111512
                                                                                                                                                                                                                                                         Filter
         = 21m - j A2 1 [ & 2 j wo t ] T = 2 mm - A22 j [ & 1 2000 t - 0 . 
                                                                                                                                                                                                                             local oscillator
                                                                                                                                                                                                          eLo= 2005 (211 Fcot)
               = em -A21 sin (2woT) = -A21 .0=0
                    T > 00 2 Wo
                                                                                                                                                                                                  111) = Ac cos (2 mnfet + ng (t))
                                                                                                                                                                                                2(1) = Ac cos (211 (n for 1 Fro) + ng(1) ) + Ac cos (211 (n for fro) + ng(1))
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Banapass : center frequency

## Demodulation of angle-modulated signals interference in Angle Modulation input to the Av(t) = Accos (27fc1+ 4(t)) recieved \* (t)= A = cos (2 tot) + A ; cos [2 to (fo+fi) t] asmodulator signal zinformation of my interference fone output of an original mussage ideal frequency =Acsas (2nfct) 'Ai cas(2nfc1) cos(2nfct)-Ai sin (2nfit) sin(2nfct) demodulator = R(t) cos (2rfit + Y(t)) Lemodulation conctant R(t) = [[Act Accos (2rfit)]2+[Acsin(27fit)]2 FOR FM Q(t) = 2nfa(t mialda Y(t) = tan-1 [ A : sin(27fit) output of an yd(t)=Ko. F1. m(t) ActAi Cos(27fit) ideal phase R(1) = Ac+Accos (2Tifit) demodulator Y(1) = tan' (AL SIMIZEFET) FM Demodylator Xv(t) = Ac[1+ Av cos(2Tf; t)] cos(2Tfc++V(t)) Bandpass Limiter PM demodulation 1×(t) Limiter Differentiator Yo = Ko Ai SIN (2 Tifit) Bandpass Ac FILTER FM demodulation 12(1)= 1 KD A (AL SIN (2) fit) e(t) 10(1) = Ac de = (Ac 21)ta m(1) > Envelope In At Ac Detector Pulse width Modulation Xv (t) = Accos (2719c1+4(t)) Sin (2 Tet + 4(t) c(t) = dx(t) = -Ac[271fc+d4 Message cianal =0 At venstarit. dthiw vallams. larger width Envelope negative values -> for positive of signal values of the signal